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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/679,650	10/05/2003	Atau Tanaka	282737US8X	3929

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EXAMINER	
SHENG, TOM V	
ART UNIT	**PAPER NUMBER**
2629	
NOTIFICATION DATE	**DELIVERY MODE**
05/23/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/679,650	TANAKA ET AL.	
	Examiner	Art Unit	
	Tom V. Sheng	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 February 2007*.
2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27 and 29-32* is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1,2,5,12-27 and 29-32* is/are rejected.
7)☒ Claim(s) *3,4 and 6-11* is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a)☐ All b)☐ Some * c)☐ None of:
1.☐ Certified copies of the priority documents have been received.
2.☐ Certified copies of the priority documents have been received in Application No. _____.
3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-2, 5, 12-27 and 29-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jorgensen et al. (US 6,720,984 B1), hereinafter Jorgensen, in view of Kiraly et al. (US 6,249,606 B1), hereinafter Kiraly.

As for claim 1 and associated claims 27 and 32, Jorgensen teaches a method of obtaining a signature (M-dimensional vector fv) of a gesture (gesture performed by a person; fig. 1, 2, column 3 lines 3-33) produced in free space (as shown), by deriving at least one time-evolving signal (EMG signals sf each correspond to two or more spaced apart sensors 14-1 and 14-2; column 3 lines 24-33) representative of muscular activity involved in producing the gesture (each EMG signal sf is produced based on muscle contraction or relaxation; column 3 lines 34-43) and determining at least one value of a parameter (Psfi) yielded by that signal.

Jorgensen's time evolving signal sf(t,d,m) naturally defines a multi-dimensional vector based on the number of sensors, which correspond to the number of channels m. Specifically, Jorgensen teaches that the number of channels M is at least 2 (m=1...M; M>=2). See fig. 5, column 4, line 66 through column 5, line 12. Moreover, Jorgensen teaches that the vectors are time-indexed (d). See fig. 6, column 5, lines 20-39 and column 6, lines 12-22. That is, the vectors are time-indexed. This is different from the current invention where each dimension of its vector is defined by a time interval/sub-frame whereas for Jorgensen each dimension is defined a different channel/sensor.

Thus, Jorgensen does not teach the claim limitations, "time dividing the time-evolving signal into sub-frames, and for at least one sub-frame:

determining at least one said parameter value yielded by said time-evolving signal over at least a part of that sub-frame, and

expressing said parameter value as a component of a vector along a dimension thereof specifically allocated to that sub-frame, the resultant vector forming the signature of said gesture."

Kiraly teaches a method and system for gesture recognition. Particularly, Kiraly teaches gesture in the form of a hand or body initiated cursor movement pattern in particular directions done in particular periods of time. Kiraly teaches that the coordinate displacement information of the cursor movement pattern is sampled over a selected sampling frequency and therefore each coordinate is associated with a time stamp (fig. 1; column 5, lines 39-49).

Particularly, Kiraly teaches single-stroke, double-stroke, or triple-stroke gestures, with each stroke having multiple segments (fig. 10A; column 12, lines 37-46). A multi-dimensional feature vector representing a gesture is formed by adding the feature of each segment as a component of the vector (fig. 8B; column 13, lines 7-39).

One of ordinary skill in the art would recognize that the forming of a feature vector by extracting features out of segments of the stroke(s) corresponds to claimed time-evolving signal (stroke(s)), sub-frames (segments, which are time sequential), parameter value (feature of each segment), expressing as a component of a vector (feature is added to the feature vector), and resultant vector forming the signature of said gesture (the final feature vector would contain all the features as vector component and inherent represent the gesture / signature of the gesture). That is, a vector that is now time based as well channels based. Further, it would be advantageous to incorporate this cursor movement gesture by means of strokes into the gesture method of Jorgensen (using only one channel), thus allowing also the use of cursor movement pattern as gesture for certain type of commands.

Therefore, it would have obvious to incorporate Kiraly's gesture method into Jorgensen's invention, because of the advantage of further allowing the use of cursor movement pattern as gesture for certain commands.

As for clam 2, Kiraly's use of sequential stroke(s) and corresponding segments correspond to claimed time-evolving signal that progresses to occupy successive subframes with resultant vector forming the signature.

As for claim 5, Jorgensen teaches a gesture learning system by conducting tests that corresponds to claimed gesture learning mode.

As for claim 12, the time intervals are inherently identical.

As for claim 13, inherently there is a noise threshold over which gesture capture would begin with a sequence of time partition intervals.

As for claims 14-16, any two of electrodes of either sensor 14-1 or 14-2 correspond to claimed sensors 2a and 2b (fig. 1 and 2).

As for claim 17, Jorgensen's gesture (and resulting signature, that is, a representation of the gesture) corresponds to a command or entry of a data (see Abstract).

As for claim 18-20, Jorgensen does not specifically teaches making a gesture of a trigger command as claimed. On the other hand, it would have been obvious that a trigger command such as play or stop by a simple gesture can be conceived by one of ordinary skill in the art, as this would be convenient especially for people with handicap.

As for claims 21-24, continuous command is an obvious alternative to predetermined commands as claim 20.

As for claims 25 and 26, use of the different or common muscular regions for a command are well-known methods of providing gesture.

As for claim 29-31, Jorgensen's appliance 13 worn on the arm together with transmitter 17 correspond to the claimed wearable unit and means for sending extracted command inputs.

Allowable Subject Matter

3. Claims 3-4 and 6-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

4. The following is a statement of reasons for the indication of allowable subject matter: none of the prior arts of record teaches the limitations

"further comprising a gesture identification mode for identifying an analyzed gesture among a set of previously learnt gestures acquired in a learning mode, each learnt gesture being expressed as a signature vector, wherein a decision on the identification of a gesture under identification is produced while that gesture is still giving rise to an active time-evolving signal (14)" of claim 3,

"producing on the fly at least one partial signature vector (Sc) of said gesture under identification, said partial signature vector being limited by the number parameter value(s) (Psfi) currently available, and thereby having fewer dimensions than said learnt signature vectors, for at least one partial signature vector produced, determining which signature among said learnt signatures best matches said partial signature vector, and using the result of that determining step to produce a decision on the identification of said gesture under identification" of claim 6, and

"further comprising a step of deriving an envelope (16) yielded by said time-evolving signal (14), and wherein said parameter value (Psfi) is a parameter value of said envelope (16)" of claim 9.

Claims 4 and 11 are dependent on claim 3. Claims 7 and 8 are dependent on claim 6. Claim 10 depends on claim 9.

Response to Arguments

5. Applicant's arguments filed on 2/28/2007 have been fully considered but they are not persuasive. Applicant argues that Kiraly describes receiving input data from a two dimensional (2D) cursor device, and using the data to recognize a predetermined gesture to identify a set of user commands. However, Kiraly does not teach recognizing

2D motions would work in a system for recognizing and characterizing bioelectric potential associated with gesture from 3D muscular activity. The Examiner disagrees because the Examiner is simply using Kiraly's teaching of 2D gesture that lends itself just as well to 3D gestures. Kiraly's teaching is applicable since 2D gesture also produces bioelectric signal detectable by a bioelectric sensor, as used in Jorgensen's invention.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom V. Sheng whose telephone number is (571) 272-7684. The examiner can normally be reached on 9:00am - 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tom Sheng

AMR A. AWAD
SUPERVISORY PATENT EXAMINER